Orthophotography and Elevation Geodatabase Services to Support the IndianaMap and The National Map

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Collaborating Organizations – IGIC is applying as the lead organization, in collaboration with Indiana University – University Information Technology Services (UITS).

Executive Summary: With FGDC CAP funding, IGIC and Indiana University UITS will develop the infrastructure needed to host interactive web and database services for Indiana's statewide 2005 high-resolution orthophotography and digital elevation models. These sustainable services will make the 2005 data sets available to the IndianaMap, The National Map, Geospatial One-Stop, and the NSDI Clearinghouse nodes.

Status – With exception of minor delays in delivery of the 2005 orthophotography from the vendor, the project is on budget and on schedule.

Web services

Implementation of interactive web and database services for Indiana's 2005 orthophotography and elevation models is underway. The project web interface has been initially set up (Figure 1), hardware has been ordered and installed, and system planning is complete. Orthophotography has begun to be delivered (8 of 92 counties as of this report (Figure 2)) with complete delivery anticipated by February. The first step in the project is hosting the data on a near-line massive data storage system for data retrieval and long-term archive. This system has been set up, and the first 3 counties have been loaded.

Indiana University-UITS purchased 2 drawers of parallel ATA disks for their EMC CLARiiON cabinet this fall. EMC engineers recently installed the disks in the CLARiiON cabinet in the IU-Bloomington machine room. UITS network administrators are in the process of configuring these disks in a RAID 5 configuration. This configuration is close to completion, providing an additional 6 TB of usable space to store raster images. Various options for loading the imagery to Oracle have been tested. Two issues remain of concern: 1. the main issue is finding disk space for Oracle backups – not only will the 6 TB need to be the repository for the imagery, but also provide space for the Oracle backup files on the raster catalogs; and 2. developing a loading method that is realistic in terms of time.

The initial working solution is to create a new Oracle database for the 2005 datasets (system files on fiber channel disks) and load the Orthos to two "hybrid" (term ESRI developers use) raster

catalogs– state plane east and state plane west. UITS will load both 6 in and 1 ft counties to the same raster catalog – either east or west. Each county will be a raster dataset within the raster catalog. ArcCatalog will be used to load the imagery using JPEG compression with a quality of 75 and create bilinear pyramids. This is the default quality ESRI recommends. JPEG is a lossy compression, but one frequently used and recommended by ESRI. Lossless imagery will be available for download from IU-UITS' massive data storage system. The JPEG compression should help end users performance as smaller amounts of data will transfer to client systems.

If storage is available, IU-UITS plans to load the 1 meter CIR imagery using lossless compression (LZ77) and build bicubic pyramids. This imagery can then be used for research purposes as the pixel values are unchanged. This is the method used for the 1998 and 2003 orthophotography.

Education and Outreach

One of 10 orthophotography seminars was delivered November 2005, and a conference presentation has been submitted for the Indiana 2006 GIS Conference in March 2006. The remaining seminars have been scheduled, and will be delivered after the complete data delivery and full implementation of the data web service. A robust website and monthly newsletter also provide complete information on the project status (Figure 3 (www.igic.org under "Orthophotography" link)).
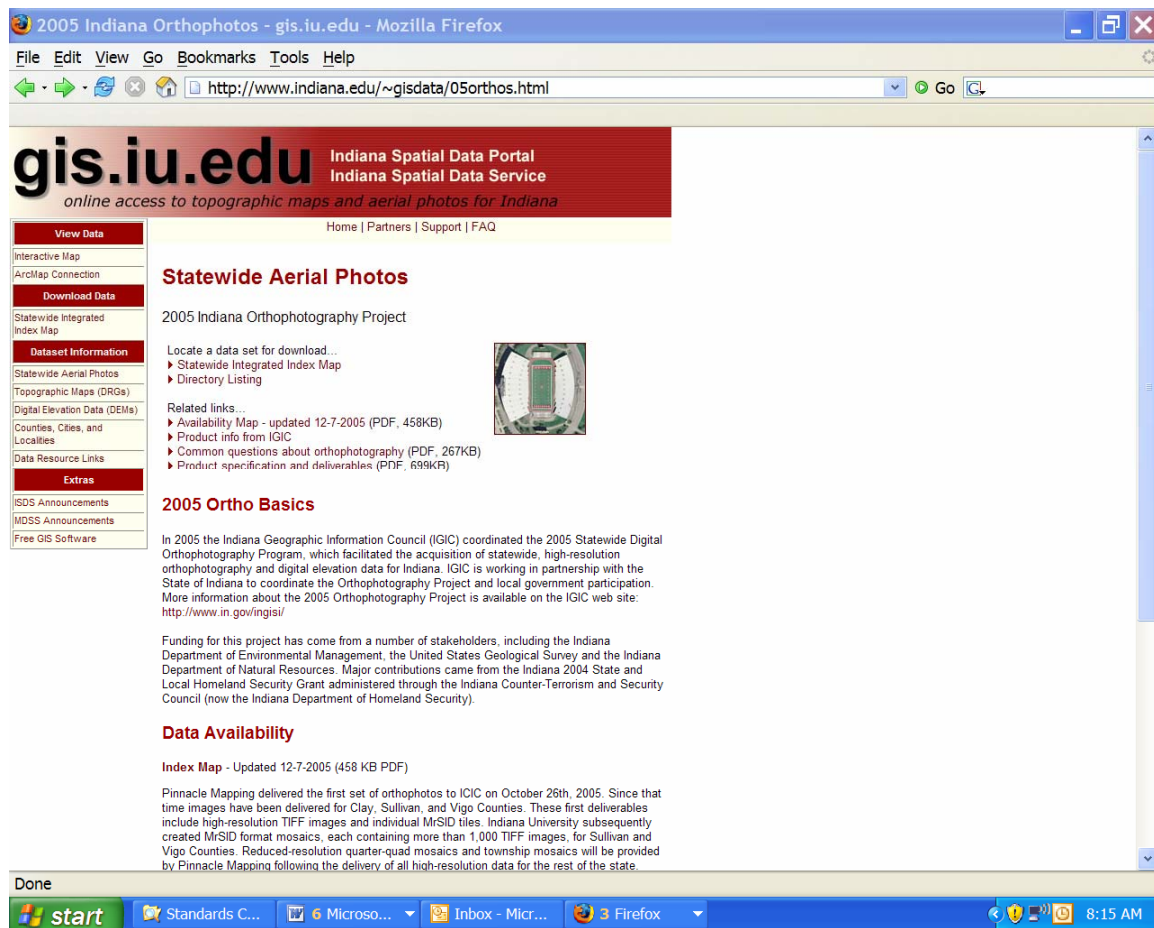
Figure 1. Web page for ortho data download.

Figure 2. Example 6" resolution color orthophotography.

Figure 3. IGIC's orthophotography web site.